



Research Paper

***Rhynchostegium riparioides* AND *Fontinalis antipyretica* IN
MACEDONIA**

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Abstract

Rhynchostegium riparioides and *Fontinalis antipyretica* are specific upstream water mosses of the Vardar River. Vardar River is the largest river in the country. Springs on the slopes of Shara, near the village Vërtok, a few kilometers from the town of Gostivar. Upstream of the Vardar River is characterized by a very interesting aquatic flora. Aquatic flora is mostly epilithic and epiphytic character. It is represented by mosses and algae. These mosses create a sensational underwater vegetation and offer very favorable living environment for nektonic organisms.

Key words: *Rhynchostegium riparioides*, *Fontinalis antipyretica*, Vardar River, aquatic flora, mosses.

INTRODUCTION

Vardar River is the largest river in the country. Springs on the slopes of Shara, near the village Vërtok, a few kilometers from the town of Gostivar. Source of the River Vardar is located at 683 m altitude. Macedonian territory reaches a length of 301 km, while its overall length, to the Aegean Sea, totaling 388 km. Upstream of the Vardar River running through Pollog Valley. The annual average water temperature of the Vardar River is 11.8 °C, in July and August maximum of 17.8 °C, while the minimum recorded in January of 5.9 °C. Physico-chemical parameters entered and heavy metals, organic compounds and inorganic sediments, turbulence, etc. Its upstream, characterized by a very interesting flora, mainly of epilithic character. These plants are found firmly attached to the rocks, covering almost entirely underwater rock surfaces [2]. Adapted this way of life, being strengthened rocky substrate, manages to resist the rapid flow of the river. Aquatic flora of the Vardar River is primarily represented by aquatic algae and mussels. Brioflora and flora of algae, from the source to close to the town of Gostivar is quite developed, while in the further course of the river significantly reduced. All this can be justified by the permanent pollution of the river made by anthropogenic factors. Ecosystems of rivers in general, and for the Vardar River is almost common phytoplankton appear very weak or almost not at all, due to the speed of flow [3], while benthic algae, mainly from algae diatom, appearing with populations rather reduced.

MATERIALS AND METHODS

For the realization of this study are applied standard methods for floristic research. Such studies involve the identification of individual species and also the assessment of abundance of species [1]. The techniques applied are known as floristic methods of description. Specimens of these species are deposited in the Department of Biology, University of Tetova.

RESULTS AND DISCUSSION

Vardar River water mussels appear especially in its upper course, from the source to close to the town of Gostivar. In the further course, their numbers significantly reduced and are found in very reduced populations. These molds are encountered forms and reinforced epilite for surface reefs. Forms are interesting for science but also a real attraction for visitors, creating underwater imposing views. Populations are important aquatic moss *Fontinalis antipyretica*, which are widespread in its upstream. These mosses create a sensational underwater vegetation and offer very favorable living environment for nektonik organisms [1], especially fish, providing shelter for their eggs, as well as underwater epiphytes microflora. Body of these mosses, more or less can be found attached epiphytes some microscopic algae [4], diatoms mostly group.

Fontinalis antipyretica moss that is found only in clean water and its sensational appearance, upstream of the Vardar River, clearly testifies to the quality and purity of water. Displayed especially in shaded areas and its presence is considered as a very important bio-indicators of clean water. Not by chance, the course follows the river, the emergence of populations of this moss becomes more and more reduced, which testifies to the permanent contamination and loss of water quality, primarily as a result of the impact of anthropogenic factors.



Fig. 1: *Fontinalis antipyretica*. Underwater views of epilite populations of moss.

Another important moss, spread upstream of the Vardar River, is *Rhynchostegium riparioides*. Green moss is deciduous. He lives fully or partially immersed in water, reinforced limestone. There stalk branched that grows 5-25 cm. It is interesting that the size of musk varies significantly, depending of living conditions, namely the purity of the water [5]. Clean water creates long branches, while in the most polluted waters are found in much smaller form.



Fig. 2: *Rhynchostegium riparioides*

CONCLUSIONS

Based on what was said above, we can conclude that:

1. Aquatic flora upstream of the Vardar River is represented with the very interesting mosses, *Rhynchostegium riparioides* and *Fontinalis antipyretica*.
2. These mosses create a sensational underwater vegetation and offer very favorable living environment for nektonik organisms.
3. The populations of these mosses are quite rich near the source, where the water is cleaner and cooler.
4. This means that these two mosses are indicators of clean water.

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